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A BIRD CENSUS AT PRESCOTT, WALLA WALLA COUNTY, WASHINGTON

By LEE RAYMOND DICE

WITH ONE PHOTO

THE following article is a report on a series of counts made of the birds on a small area. The birds on the selected area were counted five times each day for a period of ten days. Information was obtained about the variation in the number of species and of individuals at the different times of day as well as about the average number of birds per unit area. The method of study was outlined by Dr. R. M. Strong, and the work was performed by the author during June, 1908.

The area chosen is located in the Touchet Valley, two miles east of Prescott, Walla Walla County, Washington. The region is a high rolling prairie through which the valley runs in a general direction from east to west (see Dice, Univ. Calif. Publ. Zool., vol. 16, 1916, pp. 293-326). The valley at this place is about one-half mile in width, and the hills rise abruptly on either side. On account of the relatively scanty rainfall, trees, under natural conditions, are confined to the ground along the small river and along a little slough. Irrigation now is practiced in the valley, and numerous orchards and groves of trees occur. The soil, both in the valley and on the hills, is rich and supports without irrigation an abundant growth of grasses or cereals.

The census area is nearly square, being a little over 200 yards on a side. Its area is 9.1 acres. It extends north from the small river, including the stream and a strip of gravel bar. Just east of the area is a group of farm buildings, and one small barn was located near the middle of the area. About one-half of the area was an open field planted in potatoes and beardless barley; a small strip near the river and along the west side of the area had been allowed to grow up thickly to trees, brush, and briars; most of the remainder was in orchard and garden. The conditions in general are typical of those found along the valley at the present time, and differ considerably from the natural state.

The native trees and shrubs are willow, wild cherry, dogwood, cottonwood, alder, birch, thorn, and elderberry. Introduced trees and shrubs growing on the area are apple, pear, plum, peach, apricot, cherry (in fruit), locust, hazelnut, walnut, chestnut, and osage. The cottonwoods and locusts attain a height of 80 to 100 feet.

The method of taking the census was to pursue a definite course back and forth through the area, going slowly and covering it quite thoroughly, a strip at a time. The time occupied in taking each census was about one hour. The times of starting were: 4:30 A. M., 7:30 A. M., 10:30 A. M., 2 P. M., and 5 P. M. A field glass was used and all birds possible were identified. No bird was included in the count unless its identification was certain, and as great accuracy as possible was used in counting. Some birds move so rapidly from place to place that an absolutely accurate count is impossible; with these, all were

counted that were seen in the space being covered at the time; and it is believed that those missed altogether would about balance those counted twice.

At the beginning of each census period the temperature in the shade of the high trees was recorded, using a common thermometer, which might not have been entirely accurate, though it shows well the variation in temperature at the different periods.

The accompanying table gives the results of the census. The total number of species observed was thirty-five. In the table they are arranged in the order in which they are given in a report already published on the birds of the region (Dice, *Auk*, vol. 35, 1918, pp. 40-51, 148-161). The average number of species seen on each trip was about fifteen, and the average number of individuals was

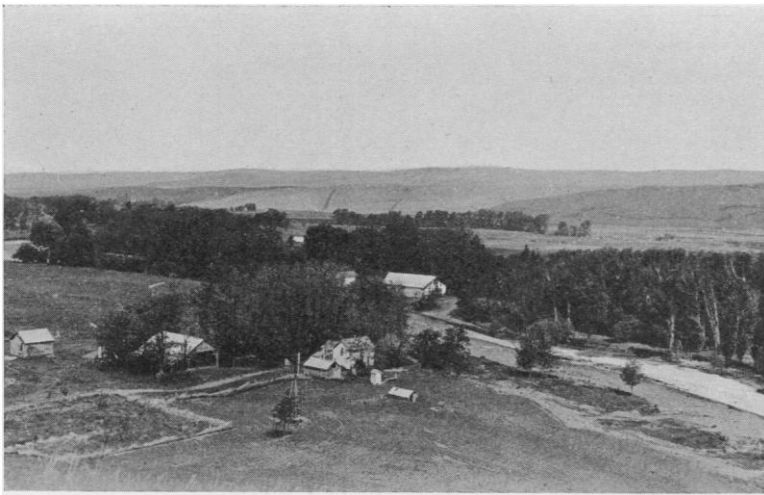


Fig. 19. THE TOUCHET VALLEY TWO MILES EAST OF PRESCOTT, WALLA WALLA COUNTY, WASHINGTON. THE VIEW IS TOWARD THE NORTH-WEST, AND THE CENSUS AREA IS ON THE RIGHT OF THE RIVER, BEGINNING A SHORT DISTANCE BEYOND THE BARN.

about sixty-nine. Two species, the Chipping Sparrow and the Robin, were seen at every period of observation. Four species, the Ruffed Grouse, Say Phoebe, Western Tanager, and Cedar Waxwing, were each seen but once. The other species occupy intermediate positions.

From the table it will be seen that there is a somewhat regular variation in the number of individuals and species seen at the different periods. The number seen is greatest in the middle of the morning and is slightly less in the early morning and in the evening. It is not believed that the number of birds on the area varied much at the different times of day or from day to day. A few birds undoubtedly came to the area to feed; some Lewis Woodpeckers, at least, came from the nearby woods to feed on the ripe cherries. Other rarer birds in moving about the valley occasionally visit the area; for instance, the Ruffed Grouse, which ordinarily lives in the denser woods along the stream, was noted once during this census. These normal movements, with species present in few

numbers, undoubtedly cause variations in the number of individuals present on the area, and some species would only occasionally be represented. However, the movements on and off the area would about balance each other, and the bird population on the area should remain about the same; for species such as the Robin, present in large numbers, even the number of individuals would probably remain nearly constant.

The variation in the number of birds seen at the different periods of observation during the day must be due to a different proportion of those present being seen. It will be readily admitted that the count never included all the birds present. Many birds are very inconspicuous unless moving, and many undoubtedly escaped observation by keeping out of sight in the grass or brush. Birds in song are especially likely to be noted. The relative activity of the birds at different times of the day is probably the explanation of the variations in the count at the various periods.

No attempt will be made to discuss the factors which might influence the activity of the birds at different times of the day. It may be pointed out, however, that, contrary to the condition usually found during periods of migration, the greatest number, both of species and individuals, was seen not in the very early hours but a little later in the morning. The number of birds seen decreases again as the heat of the day comes on, and it seems that the activity of the birds was influenced, at least to some extent, by the temperature.

It is believed that the average total number of birds seen gives very closely the number of individuals ordinarily present in June on the area. Probably this average is just a little less than the number of birds actually present. Calculated to acres, our figures give 7.552 individual birds per acre of ground. As the conditions along the Touchet Valley are very similar for at least ten miles in either direction, it is probable that about the same number of birds per acre will be found all along the stream in this region. The width in the valley covered by conditions like those on the census area would probably be on the average about one-quarter mile. This would give for this season a bird population of about 1200 per running mile along the stream. The prairie away from the vicinity of the stream has a distinctly different avifauna, and supports a decidedly less number of individuals per acre.

It will be noted that nearly half the individual birds seen on the census area were Robins. These birds were attracted to some extent by the ripe cherries on the area, but they are very abundant throughout the valley, being by far the most abundant bird along the river. A number of other species of birds, not found on the census area during the time of this study, occur in the valley and many of them have been seen on the area at other times. In the more heavily forested and more secluded parts of the valley the number of individuals of the more retiring species is undoubtedly greater than the number recorded in this census. It seems certain, then, that the average number of individuals per acre of the different species can be only approximately determined from the results of this census. Probably for the more common species, which were seen on nearly every trip, the results are more dependable. It would seem probable, after allowing a large margin for error, that the total number of individuals per unit area in the valley as determined by this study, can be considered quite dependable.

AVERAGES OF BIRDS SEEN ON CENSUS AREA
PRESCOTT, WASHINGTON; JUNE 11-20, 1908

	4:30 a. m.	7:30 a. m.	10:30 a. m.	2:00 p. m.	5:00 p. m.	Total times seen	Average individ- uals per period	Average individ- uals per acre
Temperature. Fahr.	43.9	56.8	65.9	67.2	66.2			
Sandhill Crane	0.1	.....	.....	.....	0.1	2	0.04	0.004
Killdeer	0.8	0.5	0.4	0.5	0.9	19	0.62	0.068
Bob-white	0.3	1.2	1.1	1.4	1.0	29	1.00	0.110
Canada Ruffed Grouse	0.1	.....	.....	.....	.....	1	0.02	0.002
Western Mourning Dove	1.4	3.2	2.3	2.1	1.8	40	2.16	0.237
Sparrow Hawk	1.7	1.3	1.6	1.1	1.2	46	1.38	0.152
Batchelder Woodpecker .....	....	0.4	0.5	0.6	0.3	15	0.36	0.040
Lewis Woodpecker	3.9	6.0	6.8	5.6	4.8	48	5.42	0.596
Red-shafted Flicker	1.3	1.1	2.0	1.4	1.0	33	1.36	0.149
Eastern Kingbird	1.3	0.4	0.9	0.8	0.8	31	0.84	0.092
Say Phoebe .....	....	0.1	....	....	....	1	0.02	0.002
Western Wood Pewee	0.5	0.4	0.2	....	0.5	16	0.32	0.035
Magpie	4.1	4.4	6.0	5.9	3.6	44	4.80	0.527
Nevada Cowbird	0.4	0.1	....	....	0.1	5	0.12	0.013
San Diego Red-wing .....	....	0.1	0.1	....	....	2	0.04	0.004
Western Meadowlark	0.2	0.1	0.2	0.3	0.1	8	0.18	0.020
Bullock Oriole	0.3	0.4	0.4	0.4	0.2	10	0.34	0.037
Brewer Blackbird	1.1	....	0.1	0.1	....	5	0.26	0.029
Pale Goldfinch	1.1	0.3	0.5	0.2	0.1	19	0.44	0.048
Western Chipping Sparrow	4.6	4.9	5.2	4.9	3.9	50	4.70	0.516
Merrill Song Sparrow	3.9	4.0	2.7	3.0	2.3	49	3.18	0.349
Slate-colored Fox Sparrow	0.6	0.3	0.5	0.2	0.3	13	0.38	0.042
Black-headed Grosbeak	1.7	1.9	3.5	1.0	1.5	46	1.92	0.211
Lazuli Bunting	1.9	2.4	1.5	1.6	1.3	37	1.74	0.191
Western Tanager .....	....	....	....	0.1	....	1	0.02	0.002
Cedar Waxwing .....	....	0.2	....	....	....	1	0.04	0.004
Western Warbling Vireo	0.2	1.3	0.6	0.7	0.5	22	0.66	0.073
Eastern Yellow Warbler	1.1	2.1	1.5	1.1	1.2	37	1.40	0.153
Macgillivray Warbler	0.4	0.6	0.4	0.4	....	15	0.36	0.040
Long-tailed Chat .....	....	....	0.1	0.1	0.1	3	0.06	0.007
Redstart	0.6	0.5	0.9	0.7	0.4	17	0.62	0.068
Catbird	0.5	0.6	0.3	0.2	0.3	14	0.38	0.042
Red-breasted Nuthatch .....	....	....	....	0.3	0.1	4	0.08	0.009
Long-tailed Chickadee	0.6	4.3	3.5	0.8	2.6	22	2.36	0.259
Western Robin	26.4	33.9	33.6	30.3	31.3	50	31.10	3.417
Average species	15.3	16.2	15.7	14.2	14.1	15.1	.....	.....
Average individuals	61.1	77.0	77.4	65.8	62.3	.....	68.72	7.552

University of Michigan, Ann Arbor, November 4, 1920.